

## WHAT IS CLAIMED IS:

1. A digital satellite communications system for communicating data between a HUB station and a plurality of VSATs (Very Small Aperture Terminals) or between the VSATs via a communications satellite, wherein each VSAT comprises:

5 a digital signal processing means for demodulating signals which are received by the VSAT;

nonvolatile memory for storing a default program for letting the digital signal processing means execute signal demodulation at start-up of the VSAT;

10 rewritable memory for storing an operation program for letting the digital signal processing means execute signal demodulation after the start-up of the VSAT;

an operation program download means for obtaining the operation program by downloading the operation program from the HUB station;

15 an error check/rewriting means for conducting error check to the operation program downloaded from the HUB station until an errorless operation program is obtained by the download and storing the errorless operation program in the rewritable memory; and

20 a switching control means for switching a program which is loaded into and used by the digital signal processing means from the default program to the operation program.

2. A digital satellite communications system as claimed in claim 1, wherein:

5 the VSAT further comprises a reception logic means for detecting data reception from the HUB station at the start-up of the VSAT based on demodulating operation of the digital signal processing means, and

the switching control means executes the switching of the program from the default program to the operation program when the

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reception logic means detected the data reception from the HUB station.

3. A digital satellite communications system as claimed in claim 1, wherein:

the switching control means switches the program which is loaded into and used by the digital signal processing means from the operation  
5 program to the default program when reception synchronization between VSATs can not be established.

4. A digital satellite communications system as claimed in claim 1, wherein the VSAT further includes a version comparison means for comparing the version of an up-to-date operation program that can be downloaded from the HUB station with the version of the operation  
5 program which has been stored in the rewritable memory and making a request to the HUB station for the download of the up-to-date operation program so that the operation program will be replaced with the up-to-date operation program if the versions of the programs did not match.

5. A digital satellite communications system as claimed in claim 4, wherein the version comparison means regularly conducts the version comparison between calls with other VSATs by referring to version data which is included in demodulated data which is obtained by  
5 demodulating signals transmitted from the HUB station.

6. A digital satellite communications system as claimed in claim 4, wherein the version comparison means is implemented by a CPU (Central Processing Unit).

7. A digital satellite communications system as claimed in claim

1, wherein the operation program download means downloads the operation program from the HUB station via a CSC (Common Signaling Channel) outbound channel between the HUB station and the VSAT.

8. A digital satellite communications system as claimed in claim 1, wherein the digital signal processing means is implemented by a digital demodulator.

9. A digital satellite communications system as claimed in claim 8, wherein the digital signal processing means is implemented by a DSP (Digital Signal Processor).

10. A digital satellite communications system as claimed in claim 1, wherein the digital signal processing means is implemented by a digital demodulator having a clock regenerator.

11. A digital satellite communications system as claimed in claim 1, wherein the nonvolatile memory and the rewritable memory are provided to the VSAT for the exclusive use of the digital signal processing means.

12. A digital satellite communications system as claimed in claim 1, wherein the nonvolatile memory and the rewritable memory are shared by the digital signal processing means and other parts of the VSAT.

13. A digital satellite communications system as claimed in claim 1, wherein the error check/rewriting means is implemented by a CPU (Central Processing Unit).

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14. A digital satellite communications method for communicating data between a HUB station and a plurality of VSATs (Very Small Aperture Terminals) or between the VSATs via a communications satellite, comprising the steps of:

5 a default program storage step in which a default program for letting a digital signal processing means of the VSAT execute signal demodulation at start-up of the VSAT is stored in nonvolatile memory of the VSAT;

10 an initial signal reception step in which the VSAT receives signals from the HUB station and the digital signal processing means of the VSAT demodulates the received signals by use of the default program loaded from the nonvolatile memory at the start-up of the VSAT;

15 an operation program download step in which an operation program for letting the digital signal processing means execute signal demodulation after the start-up of the VSAT is downloaded from the HUB station to the VSAT;

20 an error check/rewriting step in which error check is conducted to the operation program downloaded from the HUB station until an errorless operation program is obtained by the download and the errorless operation program is stored in rewritable memory of the VSAT; and

a switching control step in which a program which is loaded into and used by the digital signal processing means is switched from the default program to the operation program.

15. A digital satellite communications method as claimed in claim 14, wherein the switching of the program from the default program to the operation program is executed when data reception from the HUB station is detected based on demodulating operation of the digital signal  
5 processing means at the start-up of the VSAT.

16. A digital satellite communications method as claimed in claim 14, further comprising a second switching control step in which the program which is loaded into and used by the digital signal processing means is switched from the operation program to the default program when reception synchronization between VSATs can not be established.

17. A digital satellite communications method as claimed in claim 14, further comprising a version comparison step in which the version of an up-to-date operation program that can be downloaded from the HUB station is compared with the version of the operation program which has been stored in the rewritable memory and a request for the download of the up-to-date operation program is made to the HUB station so that the operation program will be replaced with the up-to-date operation program if the versions of the programs did not match.

18. A digital satellite communications method as claimed in claim 17, wherein the version comparison step is regularly conducted between calls with other VSATs by referring to version data which is included in demodulated data which is obtained by demodulating signals transmitted from the HUB station.

19. A digital satellite communications method as claimed in claim 14, wherein in the operation program download step:

the download of the operation program is executed via a CSC (Common Signaling Channel) outbound channel between the HUB station and the VSAT.